

defined in the appended claims. Therefore, it is manifestly intended that this invention be limited only by the claims and equivalents thereof.

We claim:

1. A surveillance system, comprising:

a surveillance unit;

5 at least one Identification-Friend or Foe (IFF) unit coupled to at least one object; and

a processing facility;

10 said surveillance unit transmits surveillance signals to all objects within a surveillance area, and upon receipt of reflections of said transmitted signals determines locations of said objects relative to the location of said surveillance unit and communicates said determined locations to said processing facility;

15 said at least one IFF unit coupled to at least one object responsive to said surveillance signals exceeding a predetermined power level for broadcasting messages containing identification and location information of said object coupled to said IFF unit to said processing facility;

20 said processing facility compares said broadcast messages from said IFF units with said communications from said surveillance unit and performs computations including determination of all locations of all properly authorized objects within said surveillance area, identification of

objects not authorized to be in said surveillance area, and generation of appropriate notice.

2. A surveillance system as claimed in claim 1, wherein said IFF unit  
5 coupled to said object includes a GPS receiver for determining time and the location of said object.
3. A surveillance system as claimed in claim 1, wherein said surveillance  
unit is collocated with a GPS receiver for determining time and the  
10 location of said surveillance unit, and is capable of communicating said time and location of said surveillance unit to said processing facility.
4. A surveillance system as claimed in claim 1, wherein said processing  
facility compares said GPS determined location of said surveillance unit  
15 with said GPS determined locations of said objects coupled to said IFF units to determine the relative positions of said objects with respect to said surveillance unit, and correlates each said relative position of each said object coupled to said IFF unit with the corresponding said reflection of said transmitted signal.

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5. A surveillance system as claimed in claim 1, wherein said processing facility performs computations including categorization of all said reflections of said transmitted surveillance signals as: returns from fixed position objects known and approved to be in said surveillance area, objects coupled to said IFF units and approved to be in said surveillance area, and objects not approved to be in said surveillance area; for generating an alert when said objects not approved to be in said surveillance area are detected.
6. An Identification-Friend or Foe (IFF) unit, comprising:
- a radar signal detector;
  - a GPS receiver; and
  - a data communication transmitter;
- said GPS receiver receives signals from GPS satellites and derives data including current time and IFF unit location;
- said radar signal detector responds to surveillance radar main beam and generates commands to transmit data;
- said data communication transmitter responsive to each said command to transmit data broadcasts a message containing identification information, and GPS derived time and position of said IFF unit.

7. A surveillance system, comprising:

a surveillance unit;

at least one Identification-Friend or Foe (IFF) unit coupled to at least one object; and

5 a processing facility;

said surveillance unit transmits surveillance signals to all objects within a surveillance area, and upon receipt of reflections of said transmitted signals determines locations of said objects relative to the location of said surveillance unit and communicates said determined locations to said processing facility;

10 said at least one IFF unit coupled to at least one object broadcasts repeatedly at predetermined times messages containing identification and location information of said object coupled to said IFF unit to said processing facility;

15 said processing facility compares said broadcast messages from said IFF units with said communications from said surveillance unit and performs computations including determination of all locations of all properly authorized objects within said surveillance area, identification of objects not authorized to be in said surveillance area, and generation of appropriate notice.

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8. A surveillance system as claimed in claim 7, wherein said IFF unit coupled to said object includes a GPS receiver for determining parameters including time and the location of said object.

5 9. A surveillance system as claimed in claim 7, wherein said surveillance unit is collocated with a GPS receiver for determining parameters including time and the location of said surveillance unit, and is capable of communicating said time and location of said surveillance unit to said processing facility.

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10. A surveillance system as claimed in claim 7, wherein said processing facility compares said GPS determined location of said surveillance unit with said GPS determined locations of said objects coupled to said IFF units to determine the relative positions of said objects with respect to  
15 said surveillance unit, and correlates each said relative position of each said object coupled to said IFF unit with the corresponding said reflection of said transmitted signal.

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11. A surveillance system as claimed in claim 7, wherein said processing facility performs computations including categorization of all said  
20 reflections of said transmitted surveillance signals as: returns from fixed

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position objects known and approved to be in said surveillance area, objects coupled to said IFF units and approved to be in said surveillance area, and objects not approved to be in said surveillance area; for generating an alert when said objects not approved to be in said surveillance area are detected.

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12. An Identification-Friend or Foe (IFF) unit, comprising:

a GPS receiver;

a transmit controller; and

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a data communication transmitter;

said GPS receiver receives signals from GPS satellites and derives data including current time and IFF unit location;

said transmit controller compares said current time with predetermined times of transmission stored in memory, and generates commands to transmit data;

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said data communication transmitter responsive to each said command to transmit data broadcasts a message containing identification information, and GPS derived time and position of said IFF unit.

20 13. An IFF unit as claimed in Claim 12, where said data communication transmitter function is provided by a bi-directional communication device.

14. An Identification- Friend or Foe (IFF) unit, comprising:

a GPS receiver; and

a bi-directional communication device;

5 said GPS receiver receives signals from GPS satellites and derives data including current time and IFF unit location;

said bi-directional communication device responds to a received command and broadcasts a message containing identification information, and GPS derived time and position of said IFF unit.

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15. A method for identification interrogation, comprising the steps of:

a) transmitting at least one surveillance signal;

b) determining location of at least one object based on a reflection of said transmitted surveillance signal from said object;

15 c) broadcasting at least one message containing identification and position information from said at least one object; and

d) correlating said location information from said reflection signal with said broadcast information from said object to determine location of said object properly authorized to be within a surveillance area.

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